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(56) Documents Cited  
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(54) Programming a recording apparatus over a telecommunication system

(57) A telecommunication system such as a telephone network is used for remote programming of a recording apparatus. The user may gain access to the programming facility by means of a security code which may be used to by-pass a telephone answering machine.

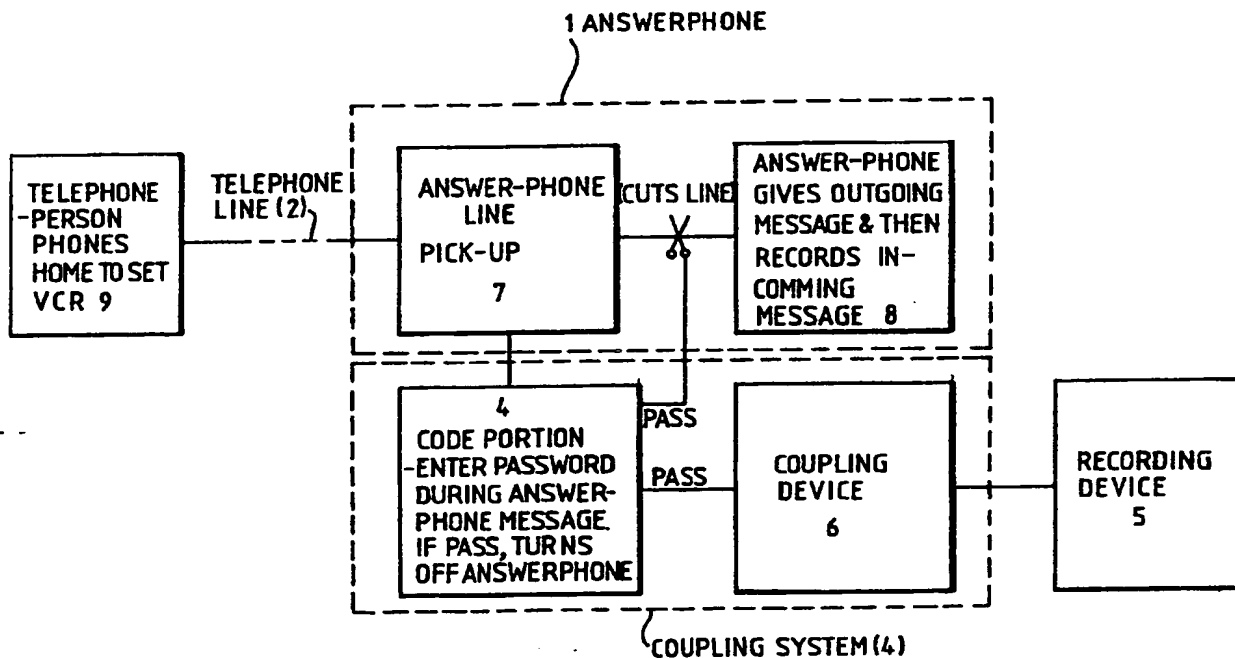


FIG.1.

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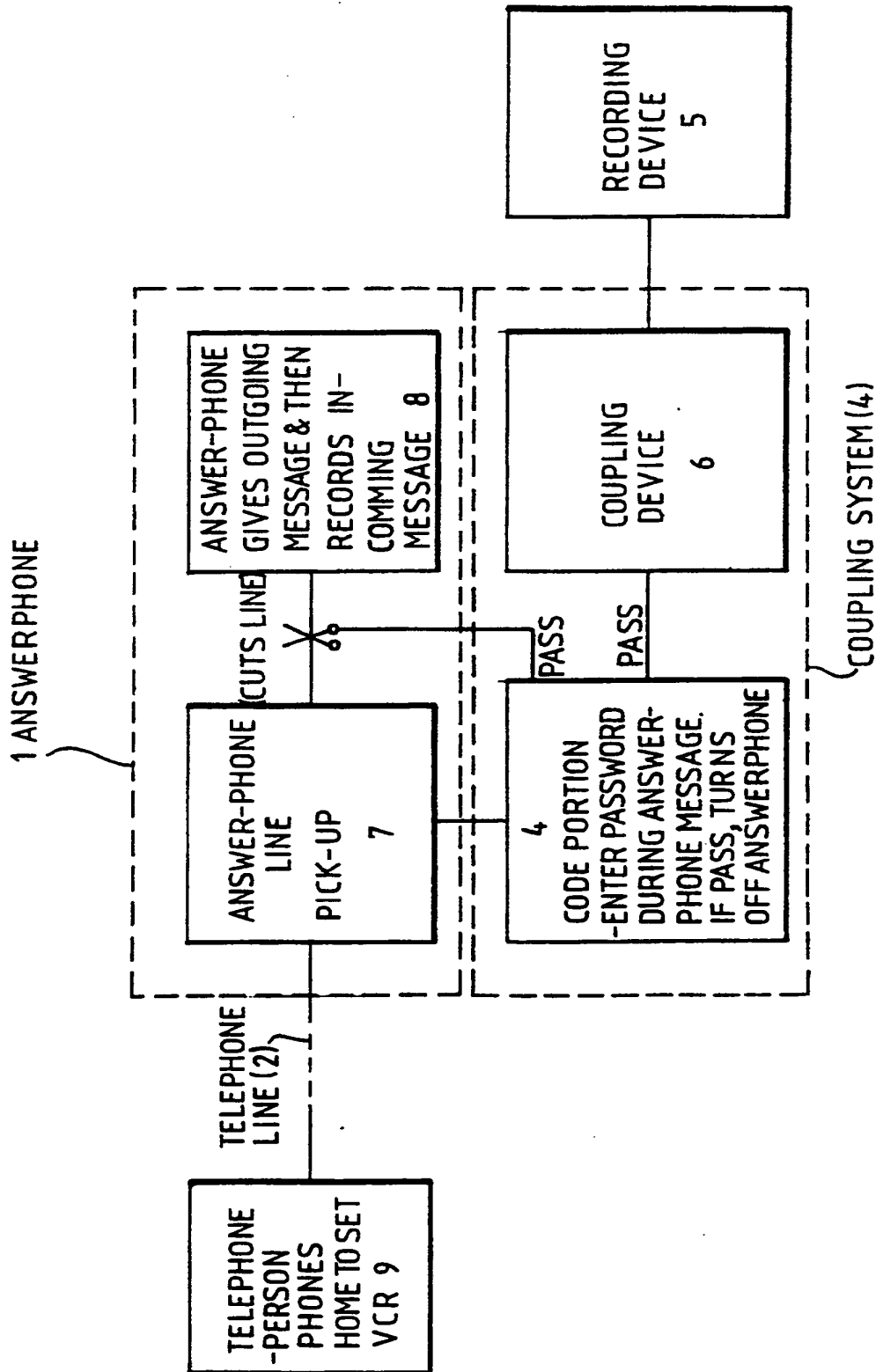


FIG.1.

COUPLING SYSTEM (4)

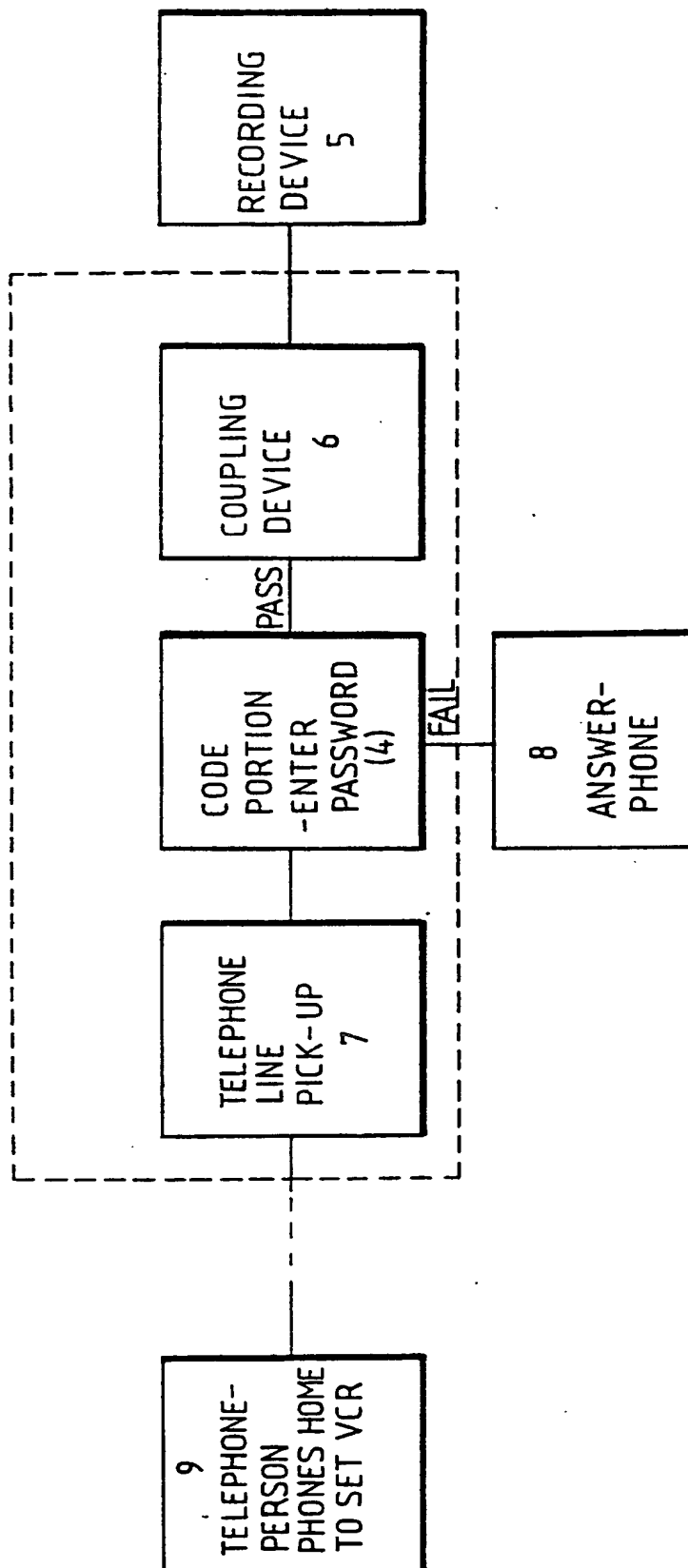


FIG.2.

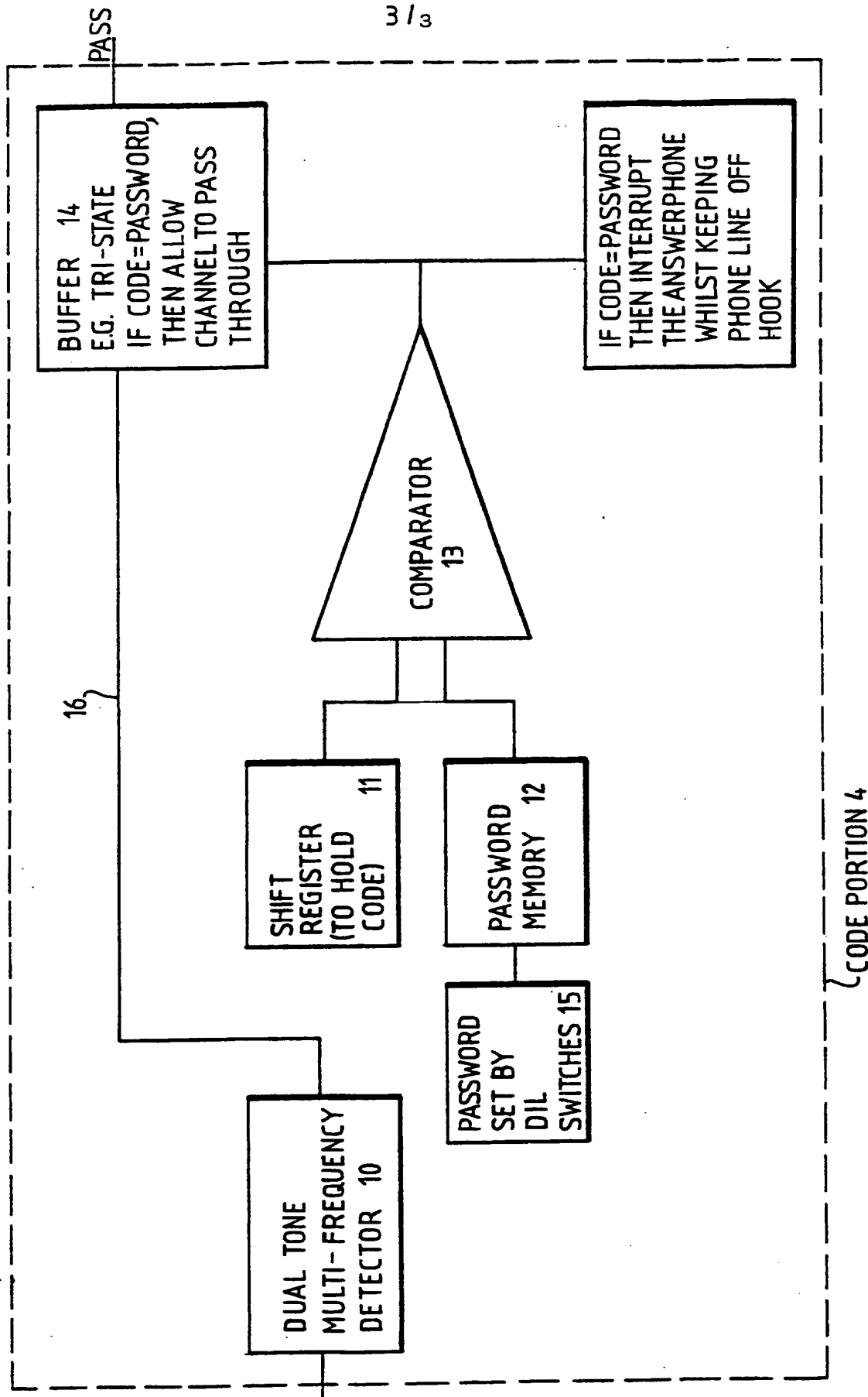


FIG. 3.

IMPROVEMENTS IN AND RELATING TO REMOTELY  
PROGRAMMING A RECORDING DEVICE

This invention relates to a method of remotely programming a recording device such as a video cassette recorder (VCR), with instructions for recording a particular event or events and to apparatus for use in the method.

In order to program a recording device with instructions for recording an event, it is usually necessary to enter those instructions directly into the device by pressing buttons or keys on the device. Alternatively, it is possible to do this remotely. For example, many VCR's are sold with a hand-held, infra-red, remote control unit. The instructions may be entered into the remote control unit, and then transmitted to the VCR.

A disadvantage of existing recording devices is that they cannot be instructed from a position other than when the recording device is in line-of-sight with incident or reflected infra-red radiation from the remote control unit. Typically, the effective range of such radiation is of the order of tens of metres. An ultra-sonic remote control unit must be positioned in the vicinity of a receiver associated with the recording device. If a user of the recording device is disposed at a considerable distance from the device they cannot instruct it without returning to it.

Sometimes a user of a recording device forgets to instruct the recording device to record an event, such as a particular television program, or the user does not realise that an event will take place until he has left the recording device. Typically, a person may leave their house without having set their VCR to record a particular programme. Alternatively, the person may not realise that a desirable programme is to be broadcast until they have left their home. It may then be inconvenient for them to return home in order

to set the VCR.

It is an object of the present invention to overcome at least some of the disadvantages of existing recording devices.

According to a first aspect of the present invention an apparatus for remotely operating a recording device in accordance with operation data including time data and channel data, comprises:

receiving means for receiving the operation data via a telecommunication system;

decoding means coupled to the receiving means for decoding the operation data to generate control signals; and

transfer means coupled to the decoding means for transferring the control signals to the recording device.

According to a second aspect of the present invention, a method of remotely operating a recording device via a telecommunication system comprises:

(a) receiving operation data via a telecommunication system, the operation data including time and channel data;

(b) decoding the operation data to generate control signals; and

(c) communicating the control signals to the recording device to cause the recording device to operate in accordance with the operation data.

According to a preferred embodiment of the invention, the recording device includes a security means which serves to prevent unauthorised operation of the recording device. The security means to control either the coupling between the receiving means and the decoding means, or the coupling between the decoding means and the transfer means. The

security means may comprise a shift register for storing a received code, a first memory device for storing a passcode, and a comparator for comparing the received code with the passcode. The coupling may be controlled by a switching device, preferably a tristate buffer. The security means may also include a detector for detecting a received code.

Preferably the telecommunication system is a telephone system, and the access code and operation data may be entered using a telephone keypad or dialling arrangement for convenience, the operation data may also include start time and end time.

The receiving means may further comprise means for picking up the telephone line. Alternatively, means for picking up the telephone line is installed in an answerphone machine. Once the access code has been correctly entered, the answerphone is stopped.

In a preferred embodiment, the telephone system uses a dual-tone multi-frequency dialling system, and the receiving means and decoding means are adapted to operate in accordance with that dialling system. If desired, other dialling systems may be used.

Conveniently, the decoding means includes a second memory for storing data before transmission to the recording device and the transfer means is a remote control unit lockable in coupling relationship with the recording device. This may include an infra-red transmitter in line of sight with the recording device, or an electrical coupling.

The recording device can be used to record broadcasts, cable programmes and satellite programmes, and is preferably a VCR in which case the apparatus is contained partly or substantially within the body of the VCR.

Conveniently, the method according to the second aspect of the invention also comprises receiving an access code via the telecommunication system to permit the remote operation of the recording device. Preferably, the received code is compared with a passcode to permit the remote operation of the recording device only when the received code is identical to the passcode.

The invention will now be described by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a block diagram showing the preferred embodiment of the present invention;

Figure 2 is a block diagram of another embodiment of the present invention;

Figure 3 is a block diagram of the code portion of the present invention.

In the following, an arrangement is described for programming a VCR by telephone so that it will record a television programme. On some occasions, a person may leave home without programming the VCR, or they may not realise that a television programme is to be broadcast until they have left their home.

The apparatus according to the invention allows a person to programme a VCR by telephone using a programme code, such as Videoplus (trade mark) or Pluscode (trade mark) which are printed in most newspapers along with the programme listings.

In use the coupling device operates in conjunction with an answerphone. The answerphone is used to "pick-up" the telephone line or take it "off-hook" when an incoming call is received. While the answerphone plays its outgoing message, the caller may dial an access code. If it is correctly dialled, then the answer machine is



switched off, while keeping the line off hook and the programme code may be dialled through the coupling device. The numbers on the keypad of the telephone are used to enter the codes.

If no access code is entered, or it is entered incorrectly, the answerphone will not be interrupted, and any subsequent programme code will not pass through the coupling device.

The recording device may be an audio cassette recorder or a monitoring device. The recording device may be programmed to record any signal which it receives from at least one input channel. The channels may be broadcasts, whether terrestrial or otherwise, cable programmes, security monitoring equipment, scientific monitoring equipment or from other sources.

As illustrated by Figure 1, an answerphone (1) will pick up the telephone line (2) after a number of rings, the number of rings being determined by a setting in the answerphone (1). The answerphone (1) automatically functions as a normal answerphone by giving an outgoing message before recording an incoming message.

A coupling system (3) between the telephone line (2) and the recording device (5). The coupling system (3) comprises a code portion (4) and a coupling device (6).

The code portion (4) is coupled to the telephone line (2) and comprises a detector (10) for detecting dialled numbers, a shift register (11) for storing the numbers, a memory (12) for storing a password, and a comparator (13) for comparing the contents of the register (11) with the contents of the memory (12). The password in the memory (12) may be set by means of DIL switches (15). The memory may be a second

register.

The code portion also includes means (14) to control the connection between telephone line (2) and VCR (5). In Figure 3, the control means is a tristate buffer. It controls a line (16) which connects the telephone line (2) to the VCR (5). The connecting line (16) is blocked when the buffer (14) causes the connecting line (16) to be in a high impedance state.

A coupling device (6) is disposed between the tristate buffer and the VCR (5).

In operation, the user picks up a telephone (9), and dials the telephone number. After a certain number of rings, the answerphone line pick-up (7) picks up the line and takes it "off-hook". The answerphone (8) will then commence playing its outgoing message, and unless it is interrupted, will record any incoming message.

If the caller wishes to set the VCR (5), he dials the access code during the outgoing message. The code that the user dials is detected by a detector (10), in this case a dual tone multi-frequency detector (10) which detects dual tone multi-frequency signals from a "tone" dial telephone (9). The code elements detected by the detector (10) are stored in a shift register (11), and the code is compared in a comparator (13) with the password stored in the memory (12). The password is set by means of DIL switches (15). Alternatively, the memory (12) may be a shift register containing the password.

If the code is not the same as the password, or no code is dialled, then no action is taken by the code portion (4), and only the answerphone (1) functions.

If the code is the same as the password, then the

answerphone (1) is turned off or interrupted whilst keeping the telephone line (2) in the off-hook state. The buffer (14) changes to a state which allows the telephone line (2) to be coupled with the coupling device (6). This puts the coupling device (6) on-line.

It is also envisaged that a tone signal is returned to the user so that he will know that he has gained access to the coupling device (6).

The user can then dial a sequence of numbers on the telephone (9) keypad, the sequence containing all the information required by the VCR(s) to record a programme at a particular time, and from a particular channel. Currently, many home VCR's may be programmed using the code known as Videoplus (trade mark), or Pluscode (trade mark) which is published in many newspapers alongside each programme. It is a sequence of numbers containing a programme identification code or information relating to the start time and finish time and channel of the programme.

The signal from the keypad enters the coupling device (6) where it is decoded, stored and then sent to the VCR (5). Alternatively, it may be decoded and stored in the code portion (4). The decoded signal is then sent, either in one block, or in individual code elements, to the VCR (5) from the coupling device (6).

As indicated previously, the coupling device (6) in the form of a remote control handset is positioned in line-of-sight with a remote control sensor in the VCR (5) and this is the only arrangement which will allow remote programming of VCR's currently sold.

However, it is envisaged that the coupling system (4) may be provided within the VCR (5), and that the VCR (5) and

the telephone system may simply be coupled by means of a cable connected at one end to a convenient telephone socket, and at the other end to a socket in the VCR (5).

The telephone system may be any kind of telecommunication system such as a cellular telephone system or satellite telecommunication system. It may even be replaced by a broadcast or cable signal.

Where a telephone answering machine (1) is not used, a device to pick up the telephone line is necessary. This pick-up device may be included in or with the coupling system (4).

In another embodiment, a caller has direct access to the coupling device (6) without needing to enter a code.

In another embodiment, the code portion (4) contains a switch instead of a buffer. The switch would be operated in response to the comparator output. When the comparator output indicates that the correct code has not been entered, then the switch remains off. When the output indicates that the correct code has been entered, the switch is on. Once the switch is on, it would remain on until the caller has hung up.

In yet a further embodiment, the user dials the numbers on the telephone (1) keypad. These produce dual tone multi-frequency (DTMF) code elements which are detected in the detector (10). Alternatively, the telephone system may use different dialling signals. This may be done relatively easily by changing the detector (10). Another alternative is for the user to generate the signals by means of a portable signal generator.

**CLAIMS:**

1. An apparatus for remotely operating a recording device in accordance with operation data comprising time data and channel data, the apparatus comprising:

receiving means for receiving the operation data via a telecommunication system;

decoding means coupled to the receiving means for decoding the operation data to generate control signals; and

transfer means coupled to the decoding means for transferring the control signals to the recording device.

2. An apparatus according to claim 1, including security means for preventing unauthorised operation of the recording device.

3. An apparatus according to claim 2, wherein the security means controls the coupling between the receiving means and the decoding means.

4. An apparatus according to claim 2, wherein the security means controls the coupling between the decoding means and the transfer means.

5. An apparatus according to any one of claims 2 to 4, wherein the security means comprises a shift register for storing a received code, a first memory device for storing a password, and a comparator for comparing the received code with the passcode.

6. An apparatus according to any of claims 2 to 4, wherein the coupling is controlled by a switching device.

7. An apparatus according to claim 6, wherein the switching device is a tristate buffer.

8. An apparatus according to any one of claims 5 to 7, wherein the security means further comprises a detector for

detecting a received code.

9. An apparatus according to any one of claims 1 to 8, wherein the telecommunication system is a telephone system.

10. An apparatus according to claim 9, wherein the access code is entered on a telephone keypad.

11. An apparatus according to any one of claims 9 and 10, wherein the operation data is entered on a telephone keypad

12. An apparatus according to any one of claims 1 to 11, wherein the operation data comprises start time, end time and channel data.

13. An apparatus according to any one of claims 9 to 12, wherein the receiving means further comprises means for picking-up the telephone line.

14. An apparatus according to claim 13, wherein the means for picking up the telephone line is installed in an answerphone machine.

15. An apparatus according to claim 14, wherein the answerphone machine is stopped once the access code has been correctly entered.

16. An apparatus according to any one of claims 9 to 15, wherein the telephone system uses a dual-tone multi-frequency dialling system.

17. An apparatus according to claim 16, wherein receiving means and decoding means are adapted to operate in accordance with DTMF data.

18. An apparatus according to any one of claims 1 to 17, wherein the decoding means includes a second memory for storing data before being sent to the recording device.

19. An apparatus according to any one of claims 1 to 18, wherein the

transfer means is a remote control unit locatable in coupling relationship with the recording device.

20. An apparatus according to claim 19, wherein the transfer means is an infra-red transmitter in line of sight with the recording device.

21. An apparatus according to claim 19, wherein the transfer means includes an electrical coupling.

22. An apparatus according to any one of claims 1 to 21, wherein the recording device is adapted to record broadcasts, cable programme and satellite programmes.

23. An apparatus according to any one of claims 1 to 22, wherein the recording device is a video cassette recorder.

24. An apparatus according to any one of claims 1 to 23, being partly or substantially contained within the body of the video recording device.

25. A method of remotely operating a recording device via a telecommunication system comprising:

(a) receiving operation data via the telecommunication system, the operation data including time and channel data;

(b) decoding the operation data to generate control signals; and

(c) communicating the control signals to the recording device to cause the recording device to operate in accordance with the operation data.

26. A method according to claim 25, further comprising receiving an access code via the telecommunication system to permit the remote operation of the recording device.

27. A method according to claim 26, further comprising a received code with a passcode, and permitting the remote operation of the recording device only when the received code is identical to the passcode.

28. A method according to any one of claims 25 to 27, wherein the telecommunication system is a telephone system.

29. A method according to any one of claims 25 to 28, wherein communicating the control signals comprises sending control signals from an infra-red emitter to the recording device.

30. A method according to any one of claims 25 to 28, wherein communicating the control signals comprises sending control signals by electrical coupling to the recording device.

31. A system and method of remotely operating a recording device substantially as herein described with reference to the accompanying drawings.



**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

13

Application number

GB 9223719.7

**Relevant Technical fields**

(i) UK CI (Edition L ) H4K (KODG,KOF), H3Q (QRXX,  
QBRX,QBRX)

(ii) Int CI (Edition 5 ) H04K 11/00,11/10

Search Examiner

D MIDGLEY

**Databases (see over)**

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search

18 JANUARY 1993

Documents considered relevant following a search in respect of claims 1-30

Category (see over)	Identity of document and relevant passages			Relevant to claim(s)
X	GB 2201065	A	(LONG) whole document	1-30
X	GB 2191066	A	(HASHIMOTO) whole document	1-30
X	GB 2166322	A	(HASHIMOTO) whole document	1-30
X,Y	GB 2130052	A	(HASHIMOTO) see especially page 1, line 109 - page 2, line 1	1-30
X,Y	WO 83/04362	A1	(HASHIMOTO) see above	1-30
X	US 4899370		(MATSUSHITA) whole document	1-30
X	US 4841562		(LEM) whole document	1-30
X	US 4656655		(HASHIMOTO) whole document	1-30
X,Y	US 4540851		(HASHIMOTO) see especially page 1, column 2 lines 38-56	1-30

Category	Identity of document and relevant passages 14	Relevant to claim(s)

### Categories of documents

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